



## 14.2. Apgar score at 5 minutes (MN-2)

### 14.2.1. Documentation sheet

<b>Description</b>	Number of newborns with low (below 7) Apgar score at 5 minutes (per 1 000 live births)
<b>Calculation</b>	Numerator: number of newborns with low (below 7) Apgar score at 5 minutes. Denominator: all live births. Distribution of the Apgar score at 5 minutes is presented for the same population. An additional cut-off point often encountered in the literature (below 4) is also presented.
<b>Rationale</b>	The value of the Apgar score at 5 minutes is highly correlated with neonatal mortality and provides the best predictive value for subsequent mortality. <sup>1</sup> The Apgar score provides good information about the infant's activity and responsiveness, but should not be used alone to predict survival without brain injury or disability, especially in preterm babies. <sup>1</sup>
<b>Data source</b>	Statbel (Direction générale Statistique - Statistics Belgium)
<b>Technical definitions</b>	The Apgar score is a standardised assessment of newborns that comprises five items: heart rate, respiratory effort, muscle tone, reflex irritability, and colour, each of which is given a score of 0, 1, or 2. <sup>2</sup> Therefore, the total Apgar score ranges from 0 to 10. It is usually assessed at 1 minute, at 5 minutes, and at 10 minutes after birth.
<b>International comparability</b>	Although the Apgar score is supposed to be a standardised measure, there can be some subjectivity and differences between countries in the value recorded for each element of the Apgar score. <sup>1</sup> The counting of missing values may also raise issues, as they should not be coded as 0. <sup>1</sup>
<b>Performance Dimension</b>	Quality (effectiveness)

### 14.2.2. Results

#### APGAR5 < 7, per 1 000 live births

Overall, the number of newborns with APGAR5 <7 per 1 000 live births decreased in Belgium from 1998 to 2015 (19.10 newborns with APGAR5 <7 per 1 000 live births in 1998; 17.52 newborns with APGAR5 <7 per 1 000 live births in 2015, average annual decrease 0.09 newborns with APGAR5 <7 per 1 000 live births) (Figure 202, Table 131).

The proportion of live births with APGAR score below 7 at 5 minutes is quite similar in the three regions of Belgium, although Wallonia presents a lower rate in the recent years (in 2015, 15.06 per 1 000 live births, compared to 18.40 in Brussels and 18.70 in Flanders).

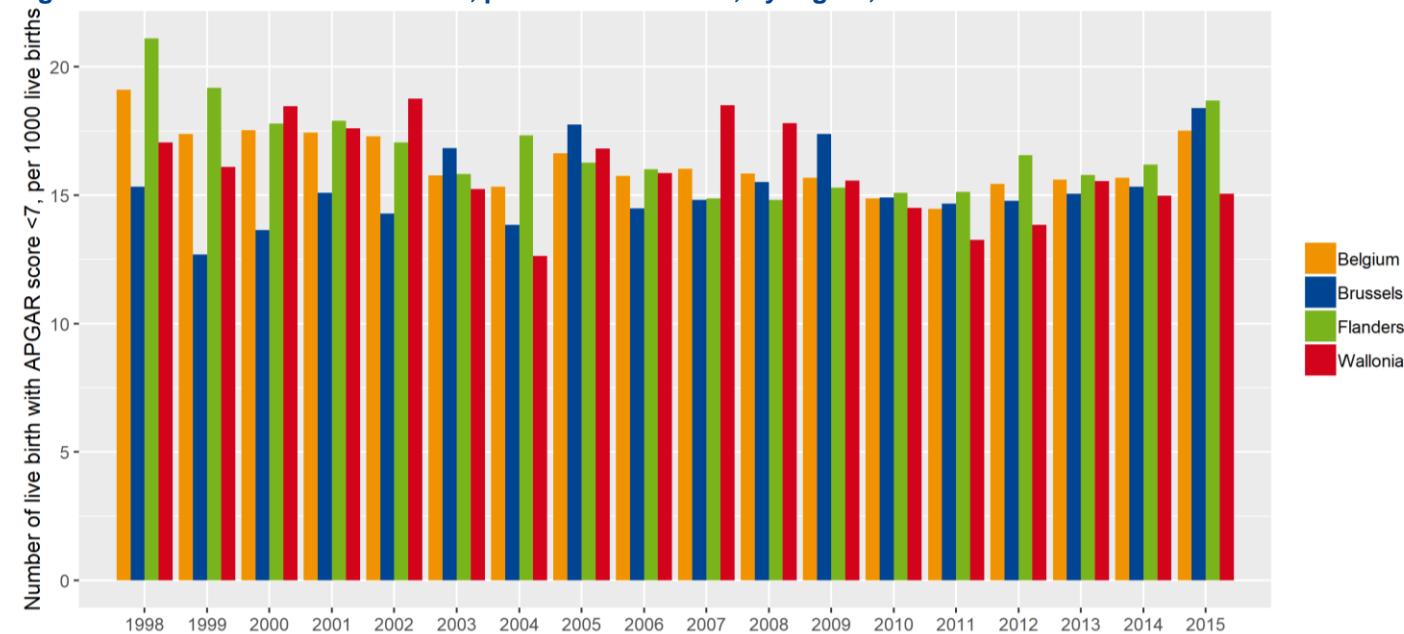
In Brussels, the proportion of live births with APGAR5 <7 increased between 1998 and 2015 (average annual increase of 0.18 newborns with APGAR5 <7 per 1 000 live births) whereas it decreased in Wallonia (average annual decrease of 0.12 newborns with APGAR5 <7 per 1 000 live births) and in Flanders (average annual decrease of 0.14 newborns with APGAR5 <7 per 1 000 live births) (Figure 202, Table 131).

### APGAR5 <4, per 1 000 live births

Overall, 2.75 newborns per 1 000 live birth had an APGAR score at 5 minutes below 4 in 2015. This rate decreased in every Belgians region between 1998 and 2015 (Table 132).

Over the recent years, lower proportion of live births with APGAR5<4 are observed in Brussels than in the other regions (in 2015, the rate was 2.29 per 1 000 live births in Brussels, compared to 2.41 in Wallonia and 3.07 in Flanders). This proportion has decreased in all three regions between 1998 and 2015 (average annual decrease of 0.14 newborns with APGAR5 <4 per 1 000 live births in Brussels, 0.04 in Wallonia and 0.02 in Flanders) (Table 132, Figure 203).

**Figure 202 – Rate APGAR score <7, per 1 000 live births, by region, 1998–2015**



Data source: Statbel, national register; Calculation: KCE

### APGAR5 distribution by region

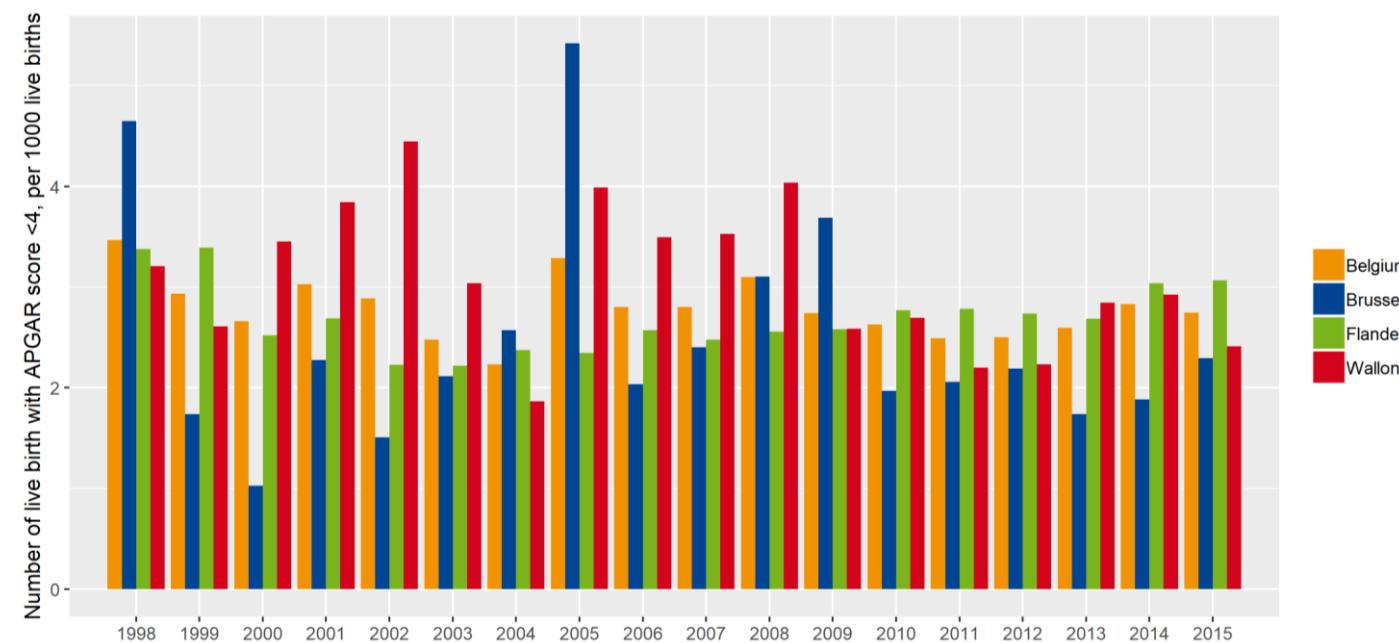
Negative skewness of the APGAR5 distribution appears in every Belgian regions because most of the newborns have an APGAR score at 5 minutes above 7. The analysis also shows a higher proportion of APGAR5 equals to 9 in Flanders than in the other regions, probably reflecting variation in coding practice between score 9 and 10 (Figure 204).

Table 131 – Number of APGAR 5 score &lt;7, per 1 000 live births, by region, 1998-2015

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
<b>Belgium</b>	19.10	17.38	17.53	17.44	17.29	15.76	15.33	16.64	15.76	16.03	15.85	15.68	14.88	14.47	15.45	15.61	15.69	17.52	-0.09
<b>Brussels</b>	15.34	12.69	13.65	15.09	14.29	16.84	13.84	17.75	14.49	14.82	15.51	17.39	14.91	14.67	14.79	15.05	15.33	18.40	0.18
<b>Flanders</b>	21.11	19.17	17.79	17.89	17.06	15.83	17.33	16.26	16.01	14.87	14.82	15.29	15.09	15.13	16.56	15.80	16.19	18.70	-0.14
<b>Wallonia</b>	17.06	16.10	18.46	17.61	18.76	15.25	12.63	16.81	15.87	18.51	17.80	15.57	14.51	13.26	13.84	15.56	14.98	15.06	-0.12

Data source: Statbel; Calculation: KCE

Figure 203 – Rate APGAR5 score &lt;4, per 1000 live births, by region, 1998-2015

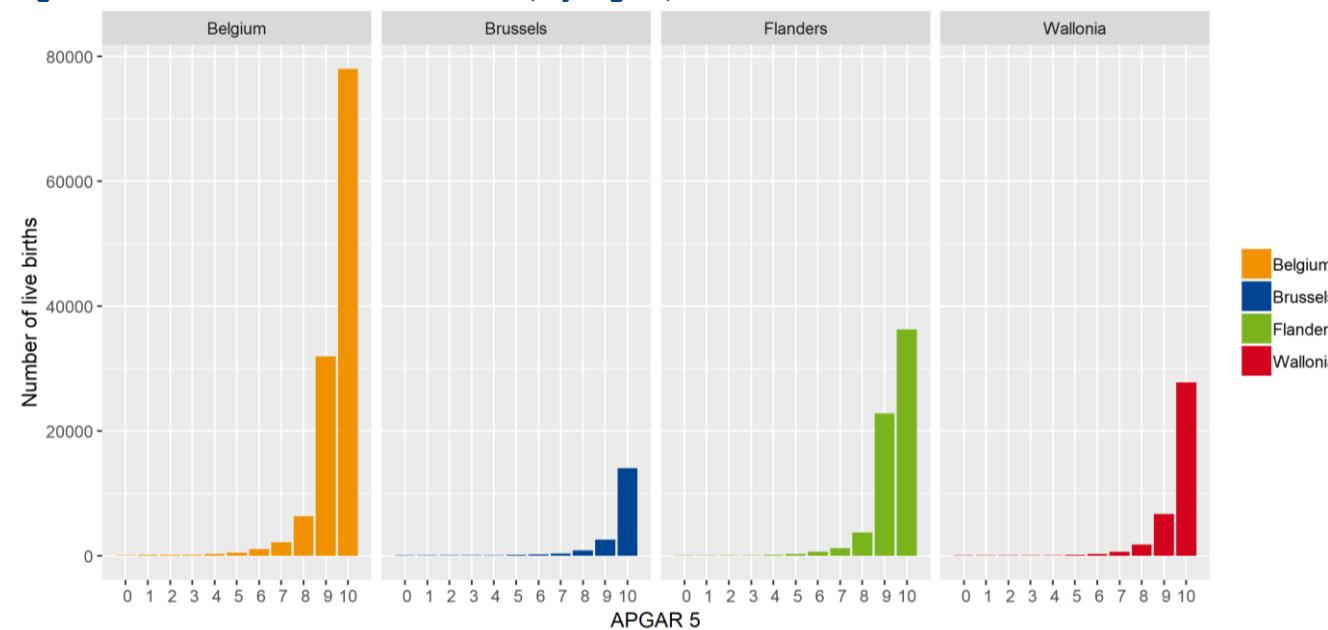


Data source: Statbel, national register; Calculation: KCE

**Table 132 – Number of APGAR 5 score <4, per 1 000 live births, by region, 1998-2015**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
<b>Belgium</b>	3.47	2.93	2.66	3.03	2.89	2.48	2.23	3.29	2.80	2.80	3.10	2.74	2.63	2.49	2.50	2.60	2.83	2.75	-0.04
<b>Brussels</b>	4.65	1.74	1.03	2.27	1.51	2.11	2.57	5.42	2.04	2.40	3.10	3.69	1.97	2.06	2.19	1.74	1.88	2.29	-0.14
<b>Flanders</b>	3.38	3.39	2.52	2.69	2.23	2.22	2.37	2.35	2.57	2.48	2.56	2.58	2.77	2.78	2.74	2.68	3.04	3.07	-0.02
<b>Wallonia</b>	3.21	2.61	3.45	3.84	4.44	3.04	1.86	3.99	3.49	3.53	4.04	2.59	2.69	2.20	2.23	2.84	2.92	2.41	-0.05

Data source: Statbel; Calculation: KCE

**Figure 204 – Distribution of the APGAR 5, by region, 2015**

Data source: Statbel, national register; Calculation: KCE



## Key points

- In 2015, around 18 newborns per 1 000 live births had an APGAR score at five minutes below 7 and around 3 had an APGAR score at five minutes below 4 in Belgium.
- <7 APGAR5 and APGAR5 <4 rate decreased in Belgium from 1998 to 2015.
- <7 APGAR5 and APGAR5 <4 rate are quite similar in the three regions of the country.

- Differences in coding practices seem to appear among regions, particularly for high scores.

## References

- [1] Zeitlin J, Mohangoo A, Delnorn M, Alexander S, Blondel B, Bouvier-Colle M, et al. European Perinatal Health Report. The health and care of pregnant women and babies in Europe in 2010. 2013.
- [2] American Academy of Pediatrics, American College of Obstetricians, Gynecologists, Committee on Obstetric Practice. The Apgar score. Pediatrics. 2006;117(4):1444-7.

## 14.3. Caesarean sections (MN-3)

### 14.3.1. Documentation sheet

Description	Number of caesarean sections per 1000 live births
Calculation	Number of caesarean sections (x1000), divided by all live births. Variability is calculated per hospital. Distribution of caesareans by categories, using Robson classification, is also presented. Analysis by Robson categories is done for caesarean rate per 1 000 deliveries.
Rationale	Since 1985 and up to 2015, WHO and international healthcare community have considered that C-sections rate should not be higher than 10-15%. <sup>1</sup> Since then, rates of caesarean delivery have increased in the majority of European countries. Reasons for the increase include scheduling convenience for both physicians and patients, evolution of the expectations and perceptions of the patients, increase of the maternal age, obesity, among others. While caesarean delivery is required in some circumstances, the benefits of caesarean versus vaginal delivery for normal uncomplicated deliveries continue to be debated. There is some evidence from observational studies of increased maternal mortality, maternal and infant morbidity, and increased complications for subsequent deliveries. Nevertheless, the Cochrane Collaboration review on caesarean section for non-medical reasons at term could not reach strong conclusions on the best medical indications due to a lack of trials on the topic. <sup>2</sup> These concerns, combined with the greater financial cost (the average cost associated with a caesarean section is at least two times greater than a normal delivery in many OECD countries), raise questions about the appropriateness of some caesarean delivery that may not be medically required. <sup>3</sup> These concerns are translated into professional guidelines. Professional associations of obstetricians and gynaecologists in countries such as Canada now encourage the promotion of normal childbirth without intervention such as caesarean sections. <sup>4</sup> Recent guidelines from the French Health Authority recommend informing the patient on the increased risk of